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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/785,418 | 02/25/2004 | Magnus Kristiansen | 121939-40308491 | 8366 |
| 20583 | 7590 | 01/29/2008 | EXAMINER | |
| JONES DAY | | | HUG, ERIC J | |
| 222 EAST 41ST ST | | | ART UNIT | |
| NEW YORK, NY 10017 | | | PAPER NUMBER | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/785,418

Applicant(s)

KRISTIANSSEN ET AL.

Examiner

Eric Hug

Art Unit

1791

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-45 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 41 and 43-45 are rejected under 35 U.S.C. 102(b) as being anticipated by Tsuneyoshi et al (JP 5-222236).

Tsuneyoshi discloses a method for making a ultra-high molecular weight polyolefin fine porous membrane. The method comprises preparing a solution of a polyolefin such as polypropylene or polyethylene (see Table 1) in a solvent and containing 0.1-5 parts weight per 100 solution with a nucleus forming agent (nucleating agent). The polyolefin solution is cooled to form a gel, then heat stretched (drawn) in a biaxial manner which removing residual solvent to form a porous membrane.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-42 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al (US 4,436,689) and Smith et al (US 4,344,908) in view of Mannion (US 5,310,950) and Kobayashi et al (JP 8-239386).

Smith discloses processes of making polymer filaments having high tensile strength and high modulus. The processes include dissolving a polymer in a solvent to form a polymer solution, cooling the solution to precipitate the polymer and form a polymer gel, then drawing (stretching) the polymer gel to form a filament.

In the '908 patent, at least partial evaporation of the solvent may take place during the process of drawing the filament. Polymer filaments may be drawn at drawing ratios exceeding 20. See column 3, lines 47-53. Suitable solvents include decalin. See column 4, lines 15-34. Polymers which may be drawn include polyolefins. See column 4, lines 7-14 for a list of polymers. In Example 1 and Table 1, column 5, high modulus (presumed to be Young's modulus) and tensile strength are illustrated for polyethylene dissolved in decalin. The modulus of the filament can exceed the highest claimed value of 30 GPa. The tensile strength can exceed the highest claimed value of 1 GPa. In Example 3, column 5, isotactic polypropylene is dissolved in decalin. In this example, a drawing ratio of 20 is used. The resulting filament has

an average molecular weight of 3,000,000 and a tensile strength of 1 GPa. The solution has about 1-5% by weight of polymer to solvent.

In the '689 patent, which incorporates by reference the '908 patent (column 5, lines 26-28), the process differs in that the polymers having generally lower average molecular weights, as low as 40,000, are utilized. Essentially all of the solvent is removed before drawing rather than during the drawing as in the '902 patent. Co-monomers may be used. Otherwise, the choice of types of polymer and solvents are essentially the same. Drawing ratios, modulus, and tensile strength of the filaments in the '689 patent are comparable to those of the '902 patent and may exceed the claimed levels, also.

Regarding independent claims 1, 41, and 42, Smith discloses the claimed processes, but does not teach providing the polymer solution with a nucleating agent. It is noted, however, that between 0.001-10% by weight of additives, stabilizers, or fiber treatment agents can be incorporated into the filaments.

Mannion and Kobayashi are cited here to exemplify the known use of various types of nucleating agents in making crystalline polyolefins. The nucleating agents act as clarifying agents for the resulting polymer, thereby improving transparency of the polymer without mechanically or chemically degrading the polymer. The nucleating agents are preferably blended with a polymer resin before crystallizing. Mannion, in particular, discloses the use of sorbitol acetals. Mannion also makes reference to many other prior art compounds including other sorbitols, sodium benzoate, and salts of carboxylic acids. Kobayashi discloses in particular the claimed 1,3-2,4-bis(3,4-dimethylbenzylidene)-D-sorbitol as a nucleating agent for an olefin resin to improve appearance, and optical, mechanical, and thermal properties. At the time of the

invention, it would have been obvious to one skilled in the art to make the polymers of Smith with a nucleating agent as taught by Mannion or Kobayashi to provide the above known advantages.

All features of dependent claims 2-19 and 25-40 are disclosed or suggested by Smith as described above, or are deemed to be otherwise obvious minor process variations, products, intended uses, or properties one skilled in the art would recognize for the types of polymers being made. All the features of claims 20-24 and 44 regarding the nucleating agents, including the amount added, are taught by Mannion in the Examples.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Hamada (US 4,016,118) discloses dibenzylidene sorbitol as a nucleating agent for polyolefins.

Tsuneyoshi et al (JP 5-222237), similar to JP 5-222236 above, disclose a gel method for producing a polyolefinic microporous film.

Yagi et al (JP 6-57055) discloses ultra-high-molecular-weight polypropylene fibers made from a solution of polypropylene in decalin.

Kono et al (JP 8-12799) discloses a gel method to make a polyolefin finely porous film.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric Hug whose telephone number is 571 272-1192.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571 272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Eric Hug
Primary Examiner